

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION V

DATE: 29 OCT 1984

SUBJECT: High Concentration of Lead in Chicago Area Park Samples

FROM: *Steve R. Matt*  
Dave Kee, Director  
Air Management Division

TO: Basil Constantelos, Director  
Waste Management Division

EPA Region 5 Records Ctr.



304016

Attached is a Board of Health memo listing the results of analyses for lead, performed on a number of soil samples gathered in the Chicago area. All but two of the samples are from park areas. The samples were reportedly taken some distance from the major arteries used to identify sample locations. I feel that the high concentrations evidenced in these areas, combined with the use of these parks as play areas for small children are cause for concern and further investigation. I would appreciate your review and scoring of these sites and your consideration for possible clean-up action under Superfund.

NOV 15 1984

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September 5, 1984

M E M O R A N D U M

TO: Dr. Bernard J. Turnock, M.P.H.  
Deputy Commissioner

FROM: Dr. Ronald L. Foreman *RLF*  
Toxicologist

THROUGH: Dr. Hyman G. Orbach *HG*  
Director of Laboratories

RE: Analysis-Soil Samples

The soil samples submitted by your office have been re-analyzed for lead content, using a more rigorous preparative procedure. This effort was deemed necessary due to the extreme heterogeneity of most samples, noted in the preliminary report (8/28/84).

<u>Sample Description</u>	<u>Lab. No.</u>	<u>%Pb*</u>	
Garfield Park (Rt. 290 & Independence Blvd)	S-10	0.14%	1,400
Humboldt Park (North Ave. & Sacramento)	S-11	0.34	3,400
Lake Shore Drive and Barry	S-12	0.23	2,300
Columbus Park (Austin Blvd & Rt. 290)	S-13	0.61	6,100
Curie Park 4949 S. Archer Ave.	S-14	0.13	
Armour Square 3309 South Shields	S-15	0.14	
Horner Park (Irving Park & California)	S-16	0.23	
Palmer Square Vegetable Garden (Bag #1)	S-17	0.14	
Palmer Square <u>Flower Garden</u> (Bag #2)	S-18	0.32	

\*Average of Duplicate Samples

Note: Conversion Factor- PPM = %Pb x 10<sup>4</sup>

Continued...

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## Discussion and Conclusion

### A. First Test Series

As indicated in the preliminary report(8/28/84), test results including gross examination of the submitted samples, suggested the following conclusions:

1. Most submitted samples are extremely heterogenous with respect to lead content and soil type.
2. Most samples contained various foreign matter, such as glass fragments and other non-soil materials of undetermined chemical composition.
3. The sample collection techniques employed were not consistent with commonly accepted methods.

### B. Comparison of Methodologies

Discussions with other laboratories made clear the fact that there is no single accepted procedure for analyses of this type. Different laboratories use widely differing methods. However, Dr. Hinesly(Univ. of Illinois-Urbana) with 16 years experience in the field, expressed the opinion that our procedure was preferable to most others discussed.

### C. Second Test Series

Results of the present test series are based on methodology which includes vigorous blending of the soil samples, followed by ashing and nitric acid digestion. Evaluation of these test results permit the following observations and conclusions:

1. The range of values between duplicate determinations of the same soil samples, in a few cases, demonstrated significant heterogeneity, considering the vigorous blending and mixing technique employed.
2. An alternative method(simple digestion) gave generally lower results than those obtained by our method(see above). This finding indicates that simple digestion is an inadequate method<sup>for</sup> total recovery of lead contained in some soils.
3. The unusually high results obtained in the first test series, for some samples(e.g., 5.4% Pb for # S-4B), strongly suggests the presence of high lead content in some non-soil particulates. This further illustrates the importance of appropriate sample collection techniques.

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1 Tsp.  $\approx$  5 grm Soil

0.1% Pb = 1,000 ppm = 1,000  $\mu\text{gPb/gm}$  (definition)

1 Tsp (5 gm) = 5,000  $\mu\text{gPb}$  at 0.1% Pb (definition)

Ingestion	= Approx. 33 x the maximum daily
of (1) tsp. (5 gm)	acceptable level of
of Soil containing	lead
0.1% Pb	(150 $\mu\text{g}$ )

RENEWED  
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